Notice of Allowability	Application No.	Applicant(s)	
	10/612,304	MATHIESEN ET AL.	
	Examiner	Art Unit	
	Sharon E. Kennedy	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *04/10/2007*.

2. ☒ The allowed claim(s) is/are *14-25*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 09/29/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Allowable Subject Matter

Claims 14-25 are allowed.

The following is an examiner's statement of reasons for allowance: Applicant has now amended the claims to require cell electroporation in addition to injection of an active agent while the needle is being inserted into the body tissue. The electroporation occurs during or after the fluid has been injected.

In paragraph [0006] of applicant published application, US 2004/0059285, applicant states that a problem in electroporation, in particular with DNA, is that the agent is injected intra-muscularly and may become trapped in muscle bundles or in adipose tissue between muscle cells. Further, the DNA can be stopped by tendons or other connective tissue barriers, making it difficult to obtain an even distribution of DNA over the entire area of tissue to which the electric filed is to be applied. This is an important problem in electroporation in view that a build up of agent in one area of the tissue affects the electroporation of tissue in that area. In addition, another problem is that large volumes of fluid injected at one site can cause considerable pain to a patient.

The closest prior art is the patent to Hofmann, US 5,273,525, cited in applicant's most recent information disclosure statement and previously cited in the examiner's PTO-892. This patent represents an early electroporation apparatus, and the figures therein bear a good resemblance to the figures submitted by applicant. Clearly, the Hofmann electroporation apparatus for DNA delivery is capable of practicing the method claimed by applicant. Referring to figure 1 of Hofmann, the apparatus comprises a

syringe device having two parallel hollow needles 12 which serve as electrodes. However, Hofmann fails to disclose the method of electroporation in combination with injecting a fluid while the needle is being inserted into the body. The Hofmann method is most concisely set forth in Hofmann method claim 11, column 5, lines 7-22 of the '525 patent. According to that method, the treatment comprises inserting a pair of electrodes into the tissue; injecting the fluid medium; and applying an electric signal sufficient to cause electroporation.

It is known to perform an injection procedure commonly known as "tracked injections. See, for example, the patent to Schmitz, US 5,620,421, column 1, lines 25-40. The track injection is a method whereby the injected fluid is distributed over a longer path by injecting the fluid concurrently while inserting the needle into the patient. The medicament is dispensed from the needle at the beginning of the insertion just under the skin. This procedure is most commonly performed in dentistry so that gum tissue is continually numbed during injection and needle insertion. It is also performed in animal vaccinations where the injection is placed in muscular tissue. Withdrawing the needle during the injection lessens the volume of vaccine applied to a single tissue area and in turn lessens the pain caused to the animal.

However, none of the prior art discloses or suggests the combination of electroporation with a concurrent injecting of the active fluid while the needle is being inserted into the body. Applicant recognizes that this technique is particularly important in electroporation so that the electrical field applied to the injected volume of therapeutic may be more effective to obtain an even distribution of DNA over the tissue to be

treated. According to applicant's invention, both the volume of the fluid injected and the size of electric field applied may be reduced while achieving a better correlation between the electric field and the fluid. Another of applicant's objectives is to lessen injection pain to the patient, but this objective is already known.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Kennedy whose telephone number is 571/272-4948. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on 571/272-8373.

/Sharon E. Kennedy/
Sharon E. Kennedy
Primary Examiner
Art Unit 1615